CHAPTER 1

Introduction and Overview

In This Chapter...

What Are the Challenges and Opportunities Facing Kentucky?

The Commonwealth of Kentucky boasts abundant natural resources and a high quality of life for its citizens. However, as we enter the 21st century, the people of Kentucky are faced with several significant challenges:

- ***Protecting Water Quality***—In 1996, approximately 3,250 miles of rivers and streams and 18,650 acres of lakes in Kentucky were impaired. The causes of impairment include industrial and municipal waste water discharges, storm runoff from agricultural land and city streets, and loss of critical fishery habitat. As Kentucky continues to grow, these and other sources of impairment are likely to increase.
- ***Maintaining Economic Growth***—If Kentucky is to continue to grow, its citizens and industries will need clean and abundant water. Fish and wildlife resources and other environmental

Sustaining high-quality water, land, and air resources is essential to the quality of life in the Commonwealth of Kentucky.

Watershed management is a way of coordinating existing programs geographically in order to manage the state's land and water resources more effectively and efficiently.

To manage land and water resources wisely, it is necessary to describe the condition of the watershed, identify sources of pollution, and then develop and implement efficient solutions that meet a range of environmental and economic goals.

amenities must also be protected to promote tourism and preserve the quality of life for many Kentuckians. New approaches must be found to manage Kentucky's farms wisely to limit the impact of agricultural chemicals and soil erosion on the environment, while protecting the farming economy.

- ***Saving Taxpayer Money***—Demands on state and federal budgets continue to grow, while our willingness to pay for more government services diminishes. As a result, many environmental and economic development programs are likely to receive smaller shares of our government budgets in coming years. Therefore, we need to eliminate duplication of effort, spend the available resources more effectively, and focus on achieving results.
- ***Working Together and Supporting Local Action***—If Kentucky is to address these challenges, multiple agencies and programs from federal, state, and especially local governments must work together to make the best use of available funds, people, and management tools. The work of local watershed protection groups and other citizen groups must also be better supported.

This document provides background information and guidance for improving the way we address these challenges through a watershed management approach. Many local, state, and federal agencies and organizations (see the box on page 1-5) have come together to implement this approach. Together, we recognize that sustaining high-quality water, land, and air resources is essential to a high quality of life in the Commonwealth of Kentucky. Our mission is soundly based in both governmental statute and resource conservation ethic, with a mandate to address contamination problems created in the past, to ensure that current activities are consistent with recognized principles of sound environmental management, and to protect the environment of the future by seizing opportunities for pollution prevention and resource allocation.

Why Does Kentucky Need This New Approach to Environmental Management?

The many agencies and organizations involved in environmental management in Kentucky have achieved great successes in controlling pollution sources and cleaning up past contamination problems, but much more remains to be done. Our ability to manage the complex environmental problems of today, while maintaining economic growth, requires coordinated solutions that focus resources geographically on specific problems.

Organizing management activities geographically is a resource-centered approach. Success is measured in terms of improving and maintaining environmental quality and protecting public health by fostering the protection and restoration of specific resource uses while sustaining economic activities that depend on natural resources. By using a watershed approach, agencies and organizations can cooperate to achieve common resource management goals within a specific geographic unit.

Why a Watershed Approach?

Why design for *watershed* units and not some other geographic unit, such as *ecoregions* or *groundwater aquifers*? All of these geographic units are critical to our understanding and management of resources.

Watersheds can be viewed as landscape units that integrate land, groundwater, surface water, and atmospheric processes over time. The topographical ridge lines that define the boundaries of watersheds provide a natural basis for organizing stakeholders, tying the people to the resource, and helping them to focus on solving common problems. As a result, watersheds serve as a convenient tool for integrating water resource protection and restoration activities.

Ecoregions help us in evaluating and establishing environmental criteria in tune with regional characteristics. Aquifers describe naturally formed underground water bodies that frequently provide vital drinking water supplies. Unfortunately, neither ecoregions nor aquifers are easy for most people to relate to or recognize. Watersheds, on the other hand, have more recognizable boundaries. For this reason, the watershed is a practical choice as a management unit.

Watershed boundaries provide a natural basis for organizing stakeholders, tying people to watershed resources, and focusing on solving common problems.

Watersheds Include Both Surface Water and Groundwater

Watersheds should be thought of as three-dimensional systems that include both surface water and groundwater flow. After a rainfall, water moves through a watershed to the lake or stream by either flowing over the land or seeping into the soil and moving more slowly to a lake or river as groundwater. As a result, shallow groundwater flow should be considered when the boundaries of a watershed are defined. This is especially important in the approximately one-fourth of Kentucky that is primarily karst terrain. The seeps found in karst regions (irregular limestone regions characterized by sinkholes, underground streams, and caverns) provide a rapid conduit for water movement from the land surface to a lake or stream.

Sound watershed management decisions must be based on an understanding of the relationship of resource quality, resource use, and physical processes within the watershed.

How Will a Watershed Approach Benefit the People of Kentucky?

The watershed management approach will allow Kentucky agencies to do more with existing resources. Some of the benefits of this approach are listed below.

- Biological monitoring efforts will be combined and capabilities increased by using Division of Water staff for algae and macroinvertebrate collections and Department of Fish and Wildlife Resources staff for fisheries collections.

à ***Benefit:*** *Better information about Kentucky's rivers and streams without higher monitoring costs*

- The U.S. Geological Survey (USGS), Natural Resources Conservation Service (NRCS), University of Kentucky-Kentucky Geological Survey (KGS), University of Kentucky-Cooperative Extension Service (CES), NREPC-Kentucky Division of Water (KDOW), Kentucky Department of Conservation (DOC), and Kentucky Department of Fish And Wildlife (F&W) have jointly funded a major project to delineate small-scale watersheds (14-digit hydrologic units) for management purposes. This project could not have occurred without the contributions of all the agencies involved.

à ***Benefit:*** *Stretching of financial resources*

- Currently only about 20 percent of Kentucky's streams have been assessed for water quality; enhanced cooperation among monitoring partners will result in better coverage of the state.

à ***Benefit:*** *Assessment of water quality in more of the state's streams*

- It has taken several years to rally cooperative efforts among the Division of Water, Letcher County Fiscal Court, Kentucky River Authority, Mountain Association for Economic Development (MACED), and Kentucky River Area Development District to address the problem of untreated sewage in Letcher County. The Watershed Management Framework will provide a forum for resolving these types of issues.

à ***Benefit:*** *Increased ability to resolve complex water resource problems*

- Water supply planning is mandated for all counties in Kentucky; cooperation among the Area Development Districts, the Division of Water, and the counties is resulting in better planning. Implementation of these water supply plans will require cooperation through the watershed approach among even more partners, as potential sources of contamination, alternate supplies, and quantity issues are addressed through drinkng water supply protection plans.

à ***Benefit:*** *More effective coordination of water supply planning . . .*

- Local watershed planning and management are currently conducted as fragmented efforts of existing Conservation Districts, Water Supply Planning Councils, Sanitation Districts, Waterways Alliances, and others. These efforts can be better coordinated and supported by state and federal partners in watershed management.

. . . and local watershed management

- The Division of Water produces a biennial report to Congress on water quality (305(b) report) and a priority watershed list (303(d) list). The U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP) allows for local priority setting and regional plans to improve water quality through better management of agricultural chemicals. Through the watershed approach, these planning and reporting efforts can be better coordinated with water quality management activities implemented by participating agencies.

à ***Benefits:*** *Better information collection and communication with the public*

Targeting of available funds to address the state's most pressing water quality problems

- The Framework provides key avenues for public participation throughout the basin management cycle described in the next chapter. Waterways Alliances, Conservation Districts, Water Supply Planning Councils, and local governments will be given the opportunity to comment on watershed management priorities and to provide insight on potential solutions suited to the locality, technical and fiscal feasibility, and local support for implementation.

à ***Benefit:*** *More opportunities for citizens to get involved in solving water resource problems*

How Are Partners Working Together to Develop This Approach?

The watershed management approach depends on cooperation among many agencies and organizations in Kentucky involved in water quality and water resource management, water research, public outreach, and land use management relating to watershed protection. Kentucky is one of many states in the Nation that recognize this fact and are developing statewide frameworks to support a multipartner approach to managing and protecting water resources. Several federal agencies are promoting a watershed approach by retraining their staff and supporting education of others. The U.S. Environmental Protection Agency (EPA) is investing many of its resources in watershed management, including resources to help states and regions develop their own watershed management frameworks. EPA has provided funding to Kentucky to conduct the Executive Short Course on Statewide Watershed Management, and to design and tailor an approach that best meets the needs of Kentucky.

Over 30 organizations are working to plan and implement the watershed approach and to encourage new partners to join in the cooperative effort.

Participants Helping to Develop a Watershed Management Framework for Kentucky

Area Development District (ADD) Council

Environmental Education Council

Kentucky Association of Counties

Kentucky Chamber of Commerce Environmental Forum

Kentucky Department of Agriculture, Division of Pesticides

Kentucky Cabinet for Health Services

Kentucky Department of Surface Mining Reclamation and Enforcement

Kentucky Department of Transportation, Office of Environmental Affairs

Kentucky Department of Fish and Wildlife Resources

Kentucky Department for Environmental Protection (DEP), Commissioner's Office

Kentucky DEP, Division for Air Quality

Kentucky DEP, Division of Waste Management

Kentucky DEP, Division of Water

Kentucky Department of Natural Resources (DNR), Commissioner's Office

Kentucky DNR, Division of Forestry

Kentucky DNR, Division of Conservation

Kentucky Geological Survey

Kentucky League of Cities

Kentucky State Nature Preserves Commission

Kentucky River Authority

Kentucky Water Resources Research Institute

Ohio River Valley Water Sanitation Commission (ORSANCO)

Tennessee Valley Authority, Water Management

University of Louisville, Institute for the Environment and Sustainable Development

U.S. Army Corps of Engineers, Louisville District

U.S. Department of Agriculture, Natural Resources Conservation Service

U.S. Fish and Wildlife Service

U.S. Forest Service

U.S. Geological Survey, Water Resources Division

Sierra Club

Kentucky Waterways Alliance

University of Kentucky Cooperative Extension Service

Environmental Quality Commission

Watershed Management Is Being Implemented Throughout the United States

Efforts to develop and implement statewide watershed management frameworks are taking place in many states including Alaska, Arizona, Delaware, Georgia, Idaho, Kentucky, Massachusetts, Minnesota, Nebraska, New Jersey, North Carolina, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, and West Virginia. Although no federal mandate requires states to implement watershed management frameworks, these states have chosen to do so for several reasons:

- ***Meeting the Need for Integrated Solutions*—**Today's environmental issues often cut across program boundaries and political jurisdictions so that individual agencies lack the capability to address problems fully. Statewide frameworks make it easier to work together to solve complex problems. In Utah, implementation of a statewide framework led to a strategy for solving problems of flooding, nonpoint source nutrient runoff, and biological habitat loss in the Bear River Basin that involves multiple organizations and landowners.
- ***Increasing Cost-Effectiveness*—**In a climate of decreasing budgets and increasing demands, public and private agencies are searching for ways to make the best use of limited funds. Statewide frameworks help by targeting staff and funds to highest priority concerns, pooling expertise and funds, and eliminating duplication of efforts. South Carolina estimates that implementation of a statewide framework is producing 40%-50% more raw water quality data at the same cost. North Carolina's watershed approach helped create a nutrient pollutant trading program in the Tar-Pamlico River Basin that allows municipalities to fund more cost-effective nonpoint source controls rather than more expensive additional point source treatment.
- ***Demonstrating Results*—**The public and private sectors are demanding proof that their efforts and expenditures are improving the environment. Many frameworks are designed to produce better information on risk to the environment, to focus on solving the problems posing the greatest risk, and to track progress. Delaware is using its statewide framework as the basis for reaching a performance partnership agreement with the U.S. Environmental Protection Agency. Incorporating environmental indicators, watershed assessment, and program implementation based on priority setting within a statewide framework has given the states a mechanism for demonstrating that block grants can be used to address environmental priorities effectively.
- ***Growing Beyond a Top-Down Approach*—**Many traditional water resource management programs use a top-down approach driven by federal or state mandates, often emphasizing regulatory actions to solve specific problems. Although this approach is sometimes needed, many of today's problems require innovative solutions incorporating stakeholder capabilities and voluntary actions. Statewide frameworks use integrated forums to encourage approaches that a broad range of stakeholders can support. In Georgia, basin advisory committees and stakeholder forums augment technical basin teams to provide opportunities for involvement at local, state, and federal levels and achieve broad-based support for management strategies.
- ***Improving the Information Base for Decision-Making*—**Through cooperative data collection and information sharing, statewide frameworks can build a stronger base of information to support decision-making. In Washington State, framework implementation is producing a database that enables stakeholders to prioritize areas most in need of cooperative management efforts.

The Kentucky Division of Water (DOW) has agreed to help lead the development of the Kentucky Watershed Management Framework by coordinating logistics for a series of work sessions. In March 1996, an EPA workshop was conducted with a broad range of leaders from many agencies to identify the challenges facing resource managers in Kentucky and to assess whether a watershed management approach would help address those challenges better than current approaches. Strong interest on the part of workshop participants led to follow-up meetings to discuss whether common goals and objectives could provide the foundation for building a multiparty framework for watershed management in Kentucky. In July 1996, DOW began to host meetings of interested participants (referred to as the Watershed Framework Development Workgroup) to begin designing and developing such an approach. Partner agencies and organizations on the Workgroup were represented by managers and key staff, who were in turn responsible for reporting back to their organizations regarding the issues involved in adopting the watershed management approach. Early in this process, the Workgroup determined that a series of subcommittees would be needed to address specific technical issues raised under the Watershed Management Framework. Beginning in August 1996, five technical subcommittees (see Appendix A for the list of participants) were established to address the following issues:

The Kentucky Watershed Framework Development Workgroup, representing a cross section of interests, has been developing a statewide watershed management approach.

- Public participation
- Watershed monitoring and assessment
- Data management and geographic information systems
- Prioritizing, planning, and implementing watershed management activities
- Funding and resource needs

These subcommittees met through the fall of 1996 and early 1997 to complete final findings and recommendations. Those findings and recommendations are included in this Framework Document.

Throughout the Framework development process, the Watershed Framework Development Workgroup and technical subcommittees confirmed the need to implement the watershed management approach by building on existing programs. Initial efforts will focus on orienting existing permitting, technical assistance, monitoring, and grant-making activities around a basin management cycle (see Chapter 2). Beginning in July 1997, emphasis will be placed on coordinating other program's and partner's work plans to support monitoring, assessment, planning, data management, and implementation activities within the basin management cycle and statewide schedule described in this document.

Over the long term, Kentucky envisions a dynamic, flexible framework for watershed management in which all interested parties can participate. As opportunities and needs arise, current Framework partners will encourage participation from other stakeholder groups to improve the effectiveness of watershed protection and restoration activities.

The Framework will be dynamic and flexible for watershed management in which all can participate.

What Are the Mission and Goals of Kentucky's Watershed Management Framework?

The Watershed Framework Development Workgroup established the following mission statement, goals, and objectives for the Kentucky Watershed Management Framework.

Mission Statement

The Kentucky Watershed Framework will serve as a means for coordinating and integrating the programs, tools, and resources of stakeholders to better protect, maintain, and restore the ecological composition, structure, and function of watersheds and to support the sustainable uses of watersheds for the people of the Commonwealth.

Goals

The primary goal of the Watershed Management Framework is to ensure sustainable use of the state's water and other natural resources into the future.

The Kentucky Watershed Management Framework is designed to facilitate an approach that focuses on meeting individual program goals to one that can achieve watershed-based goals. The Framework design reflects the following watershed resource management goals:

- Protect and enhance public health and safety.
- Conserve and enhance watershed ecosystems.
- Support sustainable watershed resource use that meets water quality standards and conservation goals.
- Reduce or prevent pollutant loadings and other stressors in watersheds.
- Preserve and enhance esthetic and recreational values of watersheds.
- Provide adequate water supply to support sustainable human use and ecological integrity.

Objectives

The goals of the Watershed Management Framework can best be achieved through statewide communication, cooperation, creative problem solving, and sharing of resources.

To attain the six goals listed above, the Kentucky Watershed Framework will be implemented to accomplish the following objectives:

- Increase communication and consensus among local, state, and federal programs and other stakeholder groups to strengthen information and data collection and exchange, share expertise and tools, and implement cooperative solutions to watershed management problems.
- Identify indicators of watershed integrity, and establish watershed management priorities to guide integrated efforts.
- Implement integrated, yet practical and flexible, solutions that achieve watershed objectives by coordinating regulatory (standards, permitting, monitoring, enforcement, and federal report-

ing) and nonregulatory (planning, technical assistance, and outreach) activities in targeted watersheds or problem areas within watersheds.

- Provide a forum for networking and cooperation among agencies and programs so that critical watershed management functions can be carried out despite changing funding levels.
- Develop stronger partnerships among federal, state, regional, and local governments and organizations to more effectively address local watershed problems.
- Coordinate existing public communication and education forums and develop new avenues for participation by citizens in watershed management in order to promote a stronger resource conservation ethic and understanding of watershed ecosystems.

What Is the Purpose of This Framework Document?

This Framework Document is designed to provide information and guidance to all participants involved in planning and implementing the watershed approach in Kentucky. The remaining chapters describe the following:

- The major components of a "framework" to support watershed management in Kentucky (Chapter 2)
- The timing of activities and specific roles for River Basin Teams, Local Watershed Task Forces, Partner Network, Basin Coordinators, and Public Information Coordinators (Chapter 3)
- Schedules and key activities for making the transition to the watershed management approach (Chapter 4)
- The resource needs involved in making the transition to and implementing Kentucky's watershed management approach (Chapter 5)

The Framework Document is a guide for ongoing coordination of water resource management activities by organizations throughout the state.